AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) ~~An electrochemical~~ A proton exchange membrane (PEM) fuel cell comprising;

a solid polymer electrolyte having a permeable body containing a cation exchange membrane;

an electrode; and

an electrically conductive contact element having a major working surface facing said electrode for conducting electrical current, said electrically conductive contact element having an electrically conductive coating deposited on and covering said major working surface ~~of said element~~, wherein said coating ~~including~~ includes a doped metal oxide composition which has a resistivity of less than .001 ohm-cm, said coating ~~being~~ providing [[in]] electrical ~~communication~~ conductivity between said electrically conductive contact element and ~~with~~ said electrode, and wherein a substantial portion of said coating is in direct contact with a reactant gas.

2. (currently amended) The PEM fuel cell of ~~claim~~ Claim 1 wherein said electrode is a catalytic electrode on one major face of the membrane, and wherein said coating comprises fluorine doped tin oxide.

3. (currently amended) The PEM fuel cell of Claim 1 wherein said electrically conductive contact element comprises a metal substrate which is susceptible to corrosion, and said coating is a corrosion-resistant protective coating which protects said metal substrate from a corrosive environment of the PEM fuel cell.

4. (currently amended) The PEM fuel cell of Claim 1 wherein said electrically conductive contact element comprises a substrate formed of electrically conductive particles dispersed in a binder matrix, and said coating provides electrical contact between said substrate and said electrode.

5. (currently amended) The PEM fuel cell of Claim 1 wherein said electrically conductive contact element comprises a matrix of compacted graphite flakes impregnated with a filler.

6. (currently amended) The PEM fuel cell of Claim 1 wherein said electrically conductive contact element comprises a conductive substrate, a layer of conductive open cell foam having a first face facing said substrate and a second face facing said electrode, and wherein said coating is on at least one of said first face or said second face of said foam layer.

7. (currently amended) The PEM fuel cell of Claim 6 wherein said open cell foam has external surfaces and internal surfaces defined by openings in said open cell foam, and wherein said coating is on said internal and external surfaces.

8. (currently amended) The PEM fuel cell of Claim 7 wherein said foam has a thickness between said first and second faces, and said coating is present on said internal and external surfaces throughout said thickness.

9. (currently amended) The PEM fuel cell of Claim 8 wherein said coating is on a surface of said substrate facing said foam.

10. (currently amended) The PEM fuel cell of Claim 6 wherein said substrate is a metal sheet and said foam is a metal foam.

11. (currently amended) The PEM fuel cell of Claim 10 wherein said metal sheet is welded or braised to said metal foam.

12. (currently amended) The PEM fuel cell of Claim 1 which further includes an electrically conductive porous material disposed between said electrode and said coated electrically conductive contact element, and wherein said porous material is selected from the group consisting of carbon paper, carbon cloth and metal screen.

13. (currently amended) The PEM fuel cell of ~~claim~~ Claim 1 wherein said electrically conductive contact element is a fluid distribution element, comprising:

an electrically conductive substrate having first and second major working surfaces, a flow field at said first major working surface for distributing fluid along said first major working surface, and said coating on said first major working surface.

14. (currently amended) The PEM fuel cell of ~~claim~~ Claim 13 wherein said coating comprises fluorine doped tin oxide.

15. (currently amended) The PEM fuel cell of Claim 13 wherein said substrate is selected from the group consisting of titanium, stainless steel, aluminum, a composite of electrically conductive particles dispersed in a binder matrix; and compacted graphite flakes impregnated with a filler.

16. (currently amended) The PEM fuel cell of Claim 13 wherein said flow field comprises a layer of electrically conductive open cell foam.

17. (currently amended) The PEM fuel cell of Claim 16 wherein said foam is conductive graphite foam or conductive metallic foam.

18. (currently amended) The PEM fuel cell of Claim 13 wherein said flow field comprises a series of channels in said first major working surface.

19. (currently amended) The PEM fuel cell of Claim 13 wherein said flow field comprises lands defining a plurality of grooves for distributing fuel or oxidant along said first major working surface.

20. (currently amended) The PEM fuel cell of Claim 13 which comprises a second flow field at said second major working surface.

21. (currently amended) The PEM fuel cell of Claim 20 wherein said second flow field comprises lands defining a plurality of grooves for distributing coolant fluid along said second major working surface.

22. (currently amended) The PEM fuel cell of Claim 14 wherein the fluorine content of said fluorine doped tin oxide is less than 10 weight percent.

23. (withdrawn) The cell of claim 1 further comprising an ion conducting electrolyte, said electrode facing the electrolyte, and said electrically conductive contact element in contact with said electrode for conducting electrical current to said electrode.

24. (withdrawn) The cell of claim 23 wherein said electrically conductive coating comprises fluorine doped tin oxide.

25. (withdrawn) The cell of Claim 24 wherein said electrically conductive contact element comprises a metal substrate which is susceptible to corrosion, and said

coating is a corrosion-resistant protective coating which protects said metal substrate from the corrosive environment of the cell.

26-28. (cancelled)

29. (withdrawn) The electrochemical cell of claim 1 wherein said electrically conductive contact element comprises a bipolar plate including a sheet metal product having said coating which is a corrosion-resistant protective coating including a metal oxide composition having a treatment which ensures conductivity.

30. (withdrawn) The cell of claim 29 wherein the treatment has been carried out in order to produce a crystal structure of the metal oxide composition coating which ensures conductivity.

31. (withdrawn) The cell of claim 29 wherein the treatment takes the form of a galvanic coating consisting of one of the elements aluminum, chromium, silver, antimony or molybdenum applied directly below the metal oxide composition coating.

32. (withdrawn) The cell of claim 29 wherein the treatment is executed as a doping.

33. (withdrawn) The cell of claim 32 wherein the protective coating consists of at least one layer.

34. (withdrawn) The cell of claim 32 wherein the protective coating comprises an oxide of one of the following elements or alloys of these elements: tin, zinc, indium.

35. (withdrawn) The cell of claim 32 wherein the protective coating comprises a first layer of a metal oxide, a second layer of a dopant which ensures conductivity, and a third layer of a metal oxide.

36. (withdrawn) The cell of claim 29 wherein the protective coating comprises an alternating layer sequence of metal oxide composition and dopants which ensure conductivity.

37. (withdrawn) The cell of claim 29 wherein the protective coating comprises at least two layers.

38. (withdrawn) The cell of claim 32 wherein the doping which ensures the conductivity comprises at least one element of the group aluminum, chromium, silver, boron, fluorine, antimony, chlorine, bromine, phosphorus, molybdenum and/or carbon.

39. (withdrawn) The cell of claim 29 wherein the protective coating comprises a protective coating deposited in a vacuum chamber.

40. (withdrawn) The cell of claim 29 wherein the protective coating has a thickness in the range between 1 monolayer and 1 μ, preferably between approximately 1 nm and approximately 500 nm.

41. (withdrawn) The cell of claim 29 wherein the sheet metal comprises aluminum, chrome-plate aluminum, copper, stainless steel, chrome-plated stainless steel, titanium, titanium alloys and iron-containing compounds both with and without metallic coating, with the metallic coating including at least one of the elements tin, zinc, nickel, chromium or alloys of these materials.

42. (withdrawn) The cell of claim 29 wherein the sheet metal product has a thickness in the range from about 0.001 mm to about 5 mm.

43. (withdrawn) The cell of claim 1 wherein said metal oxide composition comprises metal oxide treated to ensure conductivity.

44. (withdrawn) The cell of claim 1 wherein the said metal oxide composition comprises a doped metal oxide.

45. (withdrawn) The cell of claim 1 wherein the metal oxide composition comprises an oxide of an element or alloy of an element selected from the group consisting of tin, zinc, indium, and mixtures thereof.

46. (withdrawn) The cell of claim 45 wherein said doped metal oxide comprises a dopant which is selected from the group consisting of aluminum, chromium, silver, boron, fluorine, antimony, chlorine, bromine, phosphorus, molybdenum, carbon, and mixtures thereof.

47. (withdrawn) The cell of claim 1 wherein said electrically conductive contact element conducts electrical current to or from said electrode.

48. (withdrawn) The cell of claim 2 wherein said electrically conductive contact element conducts current from said electrode.

49. (withdrawn) The cell of claim 23 wherein said electrically conductive contact element conducts current to said electrode.

50. (withdrawn) An electrochemical cell comprising an electrode and an electrically conductive contact element facing said electrode for conducting electrical current, wherein said electrically conductive contact element has an electrically conductive and corrosion-resistant protective coating which comprises a doped metal oxide.

51. (withdrawn) The method of claim 50 wherein said electrically conductive contact element comprises a substrate and said layer overlies said substrate.

52. (withdrawn) A cell of claim 50 wherein said doped metal oxide is an oxide of an element or alloy of an element selected from the group consisting of tin, zinc, indium, and mixtures thereof.

53. (withdrawn) The cell of claim 50 wherein said doped metal oxide comprises a dopant selected from the group consisting of aluminum, chromium, silver, boron, fluorine, antimony, chlorine, bromine, phosphorus, molybdenum, carbon and mixtures thereof.

54. (cancelled)

55. (currently amended) ~~An electrochemical~~ A proton exchange membrane (PEM) fuel cell comprising a solid polymer electrolyte having a permeable body containing a cation exchange membrane, an electrode, a gas diffusion member, and an electrically conductive contact element having a major working surface facing said electrode for conducting electrical current, said electrically conductive contact element having an electrically conductive coating deposited on and covering said major working surface ~~of said element~~, wherein said coating ~~including~~ includes a doped metal oxide composition which has a resistivity less than .001 ohm-cm, said coating being in direct contact with said gas diffusion member and providing electrical conductivity between said electrically conductive contact element and said electrode, and wherein a substantial portion of said coating is in contact with a reactant gas.

56. (currently amended) The PEM fuel cell of ~~claim~~ Claim 55 wherein said coating comprises fluorine doped tin oxide.

57. (currently amended) The PEM fuel cell of ~~claim~~ Claim 56 wherein the fluorine content of said fluorine doped tin oxide is less than 10 weight percent.

58. (currently amended) The PEM fuel cell of ~~claim~~ Claim 55 wherein said electrically conductive contact element comprises a metal substrate which is susceptible to corrosion from said reactant gas and said coating is a corrosion-resistant protective coating which protects said metal substrate from a corrosive environment of the PEM fuel cell.